THE NEXT FRONTIER – SONOMA VALLEY BUSINESS WATER PROJECT TO REDUCE WATER DEMAND

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Abstract

The objective of this paper is the share experiences of working with institutional and business facilities to save water. This includes discussing the scope of the program, funding options, practical application, and results. The Sonoma County Water Agency (SCWA), a water wholesaler in northern California, has paired with the Sonoma County Economic Development Board (EDB), Sonoma Valley County Sanitation District (District) and the local water retailers to help promote water conservation to businesses within the Sonoma Valley. This is a unique collaboration due to the strong bond that the EDB has established with local business leaders and thus aids the SCWA in connecting with and promoting conservation among these local businesses. Together the partnership has helped a variety of businesses so far including hotels, hospitals, schools, grocery stores, athletic clubs, and manufacturing plants. The ultimate goal of the project is to assist businesses in lowering the amount of wastewater going to the treatment plants and thereby eliminating the need for costly system expansion.

Introduction

Sonoma County Water Agency (SCWA) delivers water on a wholesale basis to approximately 600,000 people from the San Francisco Golden Gate Bridge through the Sonoma County wine country. The eight primary water customers, collectively known as the water contractors and referred to in this paper as retail water agencies, consist of the cities of Santa Rosa, Rohnert Park, Petaluma, Cotati, and Sonoma; and the water districts of North Marin, Valley of the Moon, and Forestville. SCWA also delivers water to other customers including the Marin Municipal Water District and the Town of Windsor.

Current water deliveries (including water from local sources available to retail water agencies) average 62,500 acre-feet per year (AF/Y. For conversion purposes,1 acre-foot = 0.325851 million gallons (MGD) and 1 liter = 0.2642 gallons). Currently, about 70 percent of the water needs are residential. The SCWA projects that in the absence of any further conservation, total annual average contractor water sales, including

unaccounted-for water, will increase from 62,500 AF/Y today to 83,300 AF/Y in 2015. This additional demand exceeds each retail water agency's entitlement; therefore, the SCWA was requested to increase the wholesale water supply. The SCWA expanded its definition of water supply to include not only surface water and groundwater but also water conservation and water reuse.

A study conducted in 1995 concluded that 6,600 AF/Y could be reasonably saved through implementation of water conservation programs. Through successful negotiation and cooperation with the SCWA, the retail water agencies agreed collectively to achieve a combined water savings goal of 6,600 AF/Y by the year 2015. One of the currently implemented programs to save water is the Business Water Project (BWP).

The Business Water Project

Overview

The Sonoma County Business Water Project started in Sonoma Valley in the fall of 2001. In the fall of 2002 it expanded to businesses in the City of Petaluma and the City of Windsor, City of Rohnert Park in the fall of 2003 and City of Santa Rosa in 2004. The goal of the project is to assist businesses in lowering the amount of wastewater going to the treatment plants and thereby eliminating the need for costly system refurbishments. This paper will discuss the following key elements that have worked together to form the foundation for the successful project:

1. Working with Local Partners
2. Funding Sources
3. Importance of Financial Incentives
4. How to Save Water in Businesses
5. Conclusions and Recommendations

1. Working with Local Partners

One of the most fundamental reasons the project has been so successful is due to the partnership with two local entities; the EDB and the District. This partnership is unique for the region and has proven to be crucial for both obtaining participants and funding.

The Sonoma County Economic Development Board (obtaining business participation)

The Sonoma County Economic Development Board (EDB) encourages the startup, retention and expansion of Sonoma County businesses and jobs, particularly with small businesses; creation of new jobs and employment opportunities; and diversification of economic activity and strengthening the County's tax base. The EDB has two major functions:

- To provide information and referral services, to help local businesses start up, succeed, and grow.

- Develop and disseminate factual data regarding significant economic activities, trends and projections for Sonoma County.

Sonoma County Water SCWA partnered with the EDB when working on their conservation program to save water at businesses. The need for the EDB arose because the program was struggling with the challenge of finding willing businesses to participate in the program. The solution was to partner with the EDB. The EDB has a positive

relationship with the business community in Sonoma County. This is due to the neutrality of the Economic Development Board as a government agency (opposed to the highly political position of the SCWA) as well as the working relationship it has established with local businesses due to the valuable information that is produced from the office. So the EDB was able to provide a portal to the business community for the SCWA.

Sonoma Valley County Sanitation District (provide partial program funding)
Sonoma Valley County Sanitation District (District) is one of several sanitary districts that the SCWA operates. The District provides sewer service to a population of about 34,000 in Sonoma Valley, and is governed by a separate board of directors.

The District began marketing a Commercial, Industrial and Institutional (CII) Audit and Incentive Program but had limited response from the business community. In 2000, the District paired with EDB which has helped local industry become aware of options available for conserving water, including, installing a variety of equipment (e.g. new low water use hospital equipment) and technology (e.g. new low flow fixtures for restrooms and kitchens).

Program Coordination by Sonoma County Economic Development Board
The EDB worked with SCWA and the District to design and implement the program. Specifically, the EDB was responsible for (1) program outreach and publicity, (2) hiring the contractors to conduct the site visits to businesses and (3) conducting workshops and education in the community on the importance of saving water. One successful strategy developed by the EDB was to produce a flyer to send to businesses explaining the program. The one-page flyer contained the following:

"4 Simple Steps Toward Reducing Your Water Bills, Improving your Public Perception, And Becoming A More Water-Efficient Business"

> Step 1: Free Water Assessment – conducted by a qualified independent contractor..
>
> Step 2: Voluntary Action Plan – for the reduction of water use and wastewater production, focusing on ways to lower water and wastewater bills.
>
> Step 3: Post Assessment Assistance – to help put ideas into practice.
>
> Step 4: Public Awareness Campaign – highlighting participating businesses and their contributions to a water efficient Sonoma Valley.

Each geographic area is unique and may have different local agencies or potential partners, but it is a proven strategy to create a solid, well funded program.

2. Funding Sources

The CII Audit and Incentive Programs included in the Business Water Project are creatively funded through water, sewer and energy budgets, as explained below.

Overview of Funding by Sanitary Districts
Various sanitary districts located in Sonoma and Marin Counties provide funds to share in the cost of operating local water conservation programs. The Sonoma Valley County Sanitation District (District) has a unique program that receives $1,500 (U.S. Dollars) per equivalent single family dwelling of the sewer connection fee. The District's conservation

program fund is used to support cost-share agreements for reducing biochemical oxygen demand, total suspended solids (TDS) and hydraulic inflow through implementation of approved pretreatment and funding for water conservation programs that reduce inflow to the treatment facility.

Overview of Funding by Water Agencies
SCWA's water conservation and water reuse programs are self-sustainable. Annually over a ten-year period, SCWA co-funds local and regional water conservation programs with a $2 million budget. The funds are distributed to the retail water agencies in proportion to their water entitlements. Through individual agreements, $1.5 million (collectively) goes directly to the retail water agencies to share in the cost of water conservation program implementation and $0.5 million funds SCWA's regional water conservation program.

Overview of Funding by Energy Agencies
The success of the Business Water Project is significantly enhanced by financial incentives to help businesses offset their capital costs by implementing improvements thereby, increasing the amount of incentive or rebate payments. The District partnered with the local electric and gas company, for some appliances that save energy and save water. The electric and gas company offers various rebates for installing energy efficient appliances, cooling fixtures, home improvements, lighting, and pool pumps and motors. Special projects are co-funded by the California Public Utilities Commission (CPUC) through funds collected by the public goods charge. Currently the CPUC is helping to fund the commercial washing machine rebate program and the direct-install restaurant low-flow pre-rinse spray valve program.

3. Importance of Financial Incentives

One element of a program that has been proven critical is financial incentives. Many agencies throughout the State of California have attempted to run business water audit programs but were unsuccessful because they did not run incentives at the same time. It was discovered that without incentives there is little action or implementation of the water saving site visit findings. Currently in California, it has been found that the majority of businesses are not interested in making the capital investment unless they have some financial incentive to help pay for part of the cost of the equipment replacement.

For the Sonoma Valley Business Project, the main incentives offered to businesses are:

Toilet Rebate Program
The District and the local retail water agencies have operated successful toilet replacement programs since 1996; including $100 toilet rebate programs and toilet give away events sponsored by local high schools.

Installation of Pre-Rinse Spray Valves in Restaurants
The SCWA coordinates a regional Pre-Rinse Spray Valve Program for most of the retail water agencies. The program is co-funded by the California Public Utilities Commission (CPUC), through funds collected by the public goods charge, and participating water agencies throughout California:

- CPUC Funding = $131.19 per installed valve
- Participating Retail water agency = $50.00 per installed valve

The scope of the work is to provide direct installation of 390 water and energy efficient pre-rinse spray valves (1.6 gallons per minute) in food service establishment throughout California at no cost to the business or property owner.

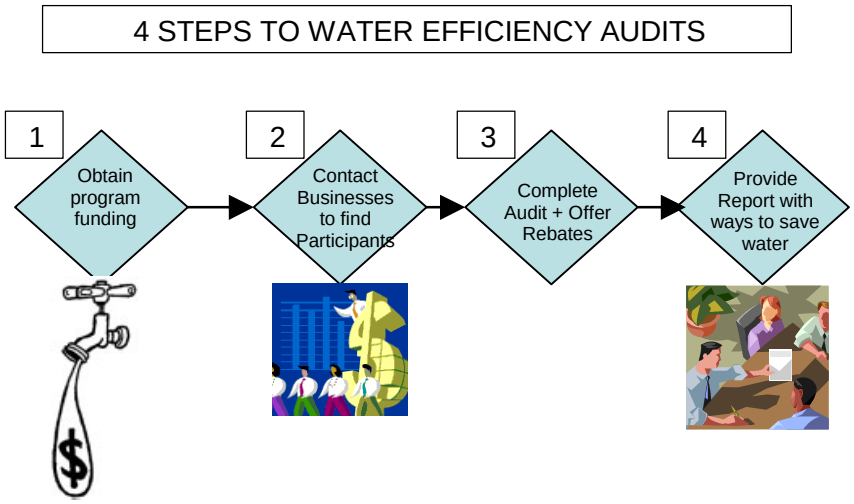
The average water and wastewater savings achieved by replacing a pre-rinse spray valve in a restaurant is 0.87 acre-feet over the 5-year lifetime of the valve. The average water and wastewater savings achieve per day is 100 to 300 gallons per day depending on the size of the restaurant and the hours of operation. SCWA is expecting to save 608 acre-feet of water over a 5-year lifetime of the valves; about 109,000 GPD (gallons per day).

Washing Machine Rebate Program
The SCWA coordinates a regional residential clothes washing machine rebate program for eight of our retail agencies. Customers are currently rebated between $100 and $150 per qualifying high-efficiency clothes washer and applications are available at the appliance store where the machines are purchased.

Since 1998, the SCWA has rebated over 8,200 high-efficiency washing machines for our retail agencies. With an estimated savings of 5,100 gallons per washer per year, these 8,200 washers save approximately 128 acre-feet per year in our region.

4. How to Save Water in Businesses – Conducting an assessment at a business

In the three years of establishment (the first assessment was conducted in April 2002), eighteen water assessments have been accomplished and efforts are being made for the water and cost-saving implementation in the industry. Success has been demonstrated thus far in the Business Water Project of Sonoma Valley, as well as, Petaluma, Windsor, Rohnert Park and Santa Rosa, and it stems from the collaborative partnership of the Economic Development Board and the Sonoma County Water Agency.



The water efficiency assessments for this project have been conducted at a variety of businesses, including hotels, hospitals, schools, grocery stores, athletic clubs, and manufacturing plants. The typical site visit takes three to four hours and includes viewing all water using equipment. Table 2 (on page 8) and the following list describe the typical equipment that can be replaced at each type of site:

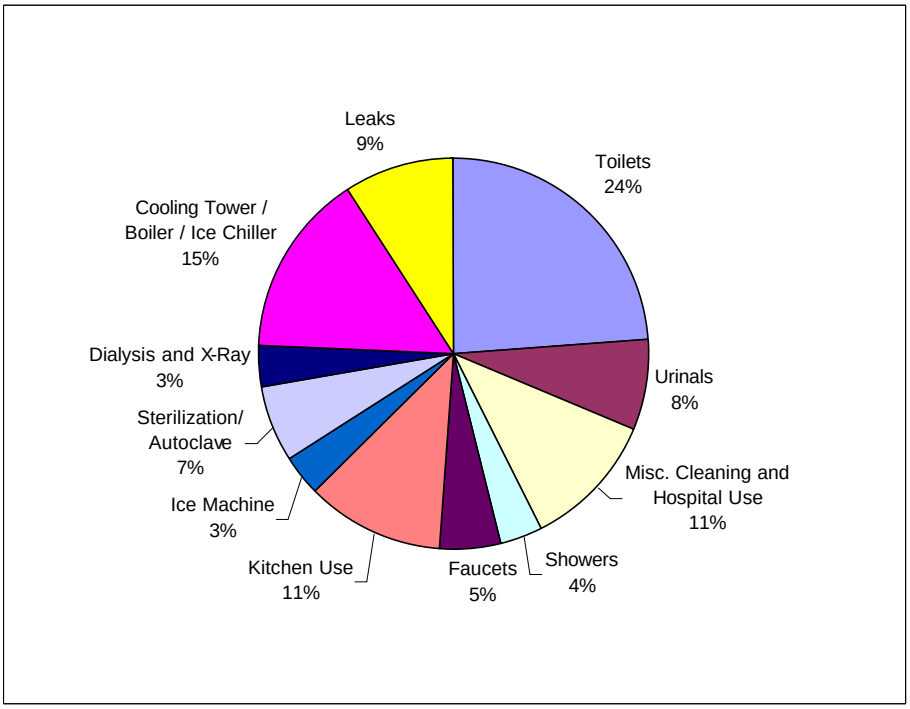
- <u>All facilities:</u> Increase employee awareness of water conservation, repair any visible leaks and post signs to encourage water efficiency, reduce irrigation water

use through more efficient irrigation practices or installing an ET Controller (EvapoTranspiration controller), air-cooled ice machines, low flow urinals, low-flow toilets, low-flow faucets, low-flow shower heads.

- ✍ Hospital: Install new technology to greatly reduce water use for autoclaves sterilizers (for more information see WaterMizer http://www.sterilizer.net/Water-Mizer.htm), X-Ray machines that use water only when in use instead of continuous flow, recycle water where feasible, wash full dishwasher and washer loads, water efficient washing machine for linens, efficient spray rinse nozzles in kitchen.
- ✍ Hotel: Recycle water where feasible, wash full dishwasher and washer loads, water efficient washing machine, efficient spray rinse nozzle in kitchen, efficient swimming and spa maintenance.
- ✍ Grocery Store: Efficient misters to keep fruit/vegetables cool, efficient spray rinse nozzles used in food preparation and handling.
- ✍ Athletic Club: Washing machine for towels, efficient swimming pool maintenance, place timer on sauna/spas.
- ✍ Schools: Efficient spray rinse nozzle in kitchens, improved irrigation efficiency of school lawn play areas.

Example Of A Business Assessment: Petaluma Valley Hospital

Maddaus Water Management (MWM) was retained in 2002 by the Sonoma County Economic Development Board to perform water audits and make water conservation recommendations for selected sites in the community. MWM conducted a site survey of the Petaluma Valley Hospital facility on May 30, 2003 and identified all significant end uses of water. Estimates of daily water use were prepared while on site for the different end uses by taking measurements of flow rates and volumes, and by interviewing staff responsible for each significant end use. Sufficient data was collected from the site survey to identify potential conservation projects and to enable a payback evaluation. Recommendations were formulated and prioritized based on the payback that each measure offers. The investigation focused on eleven water use areas as shown in the figure below:



There were eight projects identified for possible water savings, four of these projects stood out as being very attractive. A project was deemed to be attractive if it had a payback of less than 3.0 years. The recommendations are based on a payback analysis of the most cost-effective water conservation projects at the Petaluma Valley Hospital shown in Table 1. These recommended projects are listed below in order of cost effectiveness. Projects included:

1. Install low flow pre-rinse spray valves in kitchen
2. Install low flow urinals
3. Replace 25 most frequently used toilets (used by employees and visitors)
4. Install water saving device for autoclaves

Table 1 - Annual Water Bill Savings and Paybacks for Petaluma Valley Hospital

Project	Annual Water Bill Savings, ($/year)	Annual Sewer Bill Savings, ($/year)	Total Savings, ($/year)	Total Cost of Project	Payback, Years	X = Recom-mended
1. Replace Patient Toilets	$336	$607	$943	$31,500	33.4	
2. Replace 25 Most Used Toilets	$2,241	$4,043	$6,284	$11,250	1.8	***X***
3. Install Low Flush Urinals	$967	$1,744	$2,711	$3,400	1.3	***X***
4. Install Aerators	$148	$266	$487	$2,595	5.3	
5. Install Pre-Rinse Spray Valves in Kitchen	$337	$609	$946	$200	0.2	***X***
6. Water Efficiency Training for Employees (523 employees over 5 years)	$252	$455	$707	$2,500	3.5	
7. Low Flow Shower Heads	$73	$132	$205	$3,500	17.1	
8. Install Water Savings Device for Autoclaves	$715	$1,289	$2,004	$5,400	2.7	**X**
Total for Recommended Projects (X)	**$4,261/yr**	**$7,685/yr**	**$11,945yr**	**$20,250**	**1.5 years**	

5. Conclusions and Recommendations

The Sonoma Valley Business Project has successfully completed eighteen audits in three years and established incentive programs for businesses to help encourage implementation of the audit recommendations. Due to the positive achievements, the program plans to continue running into the future. The fundamental principles of how the program was formed and funded were especially important to the long term sustainability of the program. The following key items can be used in other regions when developing similar programs targeted in saving water at businesses:

1. Look for partners that have connections to local businesses.

2. Create long term program funding sources – and be innovative.

3. Learn and share methods to save water at the businesses.

4. Offer incentives to help businesses make permanent water saving improvements.

5. Offer follow-up implementation assistance to businesses.

Table 2: Water Efficient Technology Recommended for Typical Business

Fixture	Key Water Saving Feature	Fixture	Key Water Saving Feature	Fixture	Key Water Saving Feature
Toilets – Gravity 	1.6 gallons per flush Gravity tank toilet OR Dual Flush 0.5 gallons for "half" flush and 1.6 gallons per "full" flush	Shower Heads 	Maximum of 80psi at 2.5pgm	Glass washer + Water Mizer for autoclaves 	Water Mizer for autoclaves at labs and hospitals – saves 1.0 gallons per minute (a 20 percent reduction) Glass washer - Select an water efficient model
Toilets - Flushometer 	1.6 gallons per flush Flushometer	Faucets 	1.5 gallons per minute	Misters + Controllers	0.8 gallon per hour misters + controller so they can be operated only when necessary and according to climate conditions
Urinals 	0.5 gallons per flush	Ice Machine 	Air Cooled	Washer/Dryer 	Low water and energy use/ Top loading Most efficient models use 11 gallons per load
Spray Rinse Valves 	1.6 gallons per minute	Dishwashers 	5.1 gallons per wash cycle. Low water and energy use.	ET Controllers 	ET Controllers – (EvapoTrainspiration) – They are smart rain sensors that work on the amount of rainfall.